IN THE CLAIMS

Please amend the claims as follows.

1.   (Original)   An apparatus, comprising:

an input operable to receive a process variable signal associated with operation of a valve; and

a cushion filter operable to filter the process variable signal to produce a filtered process variable signal, the cushion filter implementing a cushion in a bias used by the cushion filter, the filtered process variable signal used to generate an output signal for adjusting the valve.

2.   (Currently Amended)   The apparatus of Claim 1, wherein the cushion filter is operable to filter the process variable signal by:

identifying [[a]] the bias associated with a sample of the process variable signal , the bias comprising a cushion and an increment; and

outputting an expected value for a prior sample of the process variable signal combined with a portion of the bias, the portion of the bias based at least partially on a size of the cushion.

3.   (Original)   The apparatus of Claim 1, wherein the cushion filter is operable to filter the process variable signal by identifying an expected value for a sample of the process variable signal using a model.

4.   (Original)   The apparatus of Claim 3, wherein the model identifies an expected behavior of the process variable signal.

5.   (Original)   The apparatus of Claim 1, wherein the cushion filter is operable to filter the process variable signal by taking into account at least one of noise in the process variable signal and a ramp disturbance in the process variable signal.

6.   (Original)   The apparatus of Claim 5, wherein the process variable signal comprises one of (1) a process variable signal identifying a flow rate of one or more materials exiting a tank and flowing through a pipe, and (2) a process variable signal identifying a level of one or more materials in the tank.

7.   (Original)   The apparatus of Claim 6, wherein:

the apparatus comprises two inputs operable to receive both process variable signals;

the valve controls the flow of materials into the tank; and

the output signal controls the valve such that the level of the one or more materials in the tank remains at least near a desired level.

8.   (Original)   The apparatus of Claim 7, wherein:

the cushion filter is operable to filter the process variable signal that identifies the level of one or more materials in the tank; and

the process variable signal that identifies the level suffers from a ramp disturbance caused by one or more materials entering the tank in unknown quantities.

9.   (Original)   A method, comprising:

receiving a process variable signal associated with operation of a valve;

filtering the process variable signal to produce a filtered process variable signal using a cushion filter, the cushion filter implementing a cushion in a bias used by the cushion filter; and

generating an output signal for adjusting the valve based at least partially on the filtered process variable signal.

10.   (Currently Amended)   The method of Claim 9, wherein filtering the process variable signal comprises:

identifying [[a]] the bias associated with a sample of the process variable signal ~~, the bias comprising a cushion and an increment~~; and

outputting an expected value for a prior sample of the process variable signal combined with a portion of the bias, the portion of the bias based at least partially on a size of the cushion.

11. (Original) The method of Claim 9, wherein:

filtering the process variable signal comprises identifying an expected value for a sample of the process variable signal using a model; and

the model identifies an expected behavior of the process variable signal.

12. (Original) The method of Claim 9, wherein filtering the process variable signal at least partially reduces at least one of noise in the process variable signal and a ramp disturbance in the process variable signal.

13. (Original) The method of Claim 12, wherein the process variable signal comprises one of (1) a process variable signal identifying a flow rate of one or more materials exiting a tank and flowing through a pipe, and (2) a process variable signal identifying a level of one or more materials in the tank.

14.   (Original)   The method of Claim 13, wherein:

receiving the process variable signal comprises receiving both process variable signals;

the valve controls the flow of materials into the tank;

the output signal controls the valve such that the level of the one or more materials in the tank remains at least near a desired level; and

filtering the process variable signal comprises filtering the process variable signal that identifies the level of one or more materials in the tank, the process variable signal that identifies the level suffering from a ramp disturbance caused by one or more materials entering the tank in unknown quantities.

15.   (Original)   A computer program embodied on a computer readable medium and operable to be executed by a processor, the computer program comprising computer readable program code for:

receiving a process variable signal associated with operation of a valve;

filtering the process variable signal to produce a filtered process variable signal using a cushion filter, the cushion filter implementing a cushion in a bias used by the cushion filter; and

generating an output signal for adjusting the valve based at least partially on the filtered process variable signal.

16.   (Currently Amended)   The computer program of Claim 15, wherein the computer readable program code for filtering the process variable signal comprises computer readable program code for:

identifying [[a]] the bias associated with a sample of the process variable signal ~~, the bias comprising a cushion and an increment~~; and

outputting an expected value for a prior sample of the process variable signal combined with a portion of the bias, the portion of the bias based at least partially on a size of the cushion.

17.   (Original)   The computer program of Claim 15, wherein:

the computer readable program code for filtering the process variable signal comprises computer readable program code for identifying an expected value for a sample of the process variable signal using a model; and

the model identifies an expected behavior of the process variable signal.

18.   (Original)   The computer program of Claim 15, wherein the computer readable program code for filtering the process variable signal at least partially reduces at least one of noise in the process variable signal and a ramp disturbance in the process variable signal.

19. (Original) The computer program of Claim 18, wherein the process variable signal comprises one of (1) a process variable signal identifying a flow rate of one or more materials exiting a tank and flowing through a pipe, and (2) a process variable signal identifying a level of one or more materials in the tank.

20. (Original) The computer program of Claim 19, wherein:

the computer readable program code for receiving the process variable signal comprises computer readable program code for receiving both process variable signals;

the valve controls the flow of materials into the tank;

the output signal controls the valve such that the level of the one or more materials in the tank remains at least near a desired level; and

the computer readable program code for filtering the process variable signal comprises computer readable program code for filtering the process variable signal that identifies the level of one or more materials in the tank, the process variable signal that identifies the level suffering from a ramp disturbance caused by one or more materials entering the tank in unknown quantities.

21.   (Currently Amended)   A system, comprising:

a valve;

at least one measuring device operable to generate a process variable signal associated with operation of the valve; and

a controller operable to generate an output signal for adjusting the valve based on a filtered process variable signal, the controller comprising a cushion filter operable to filter the process variable signal to produce the filtered process variable signal, the cushion filter implementing a cushion in a bias used by the cushion filter by:

identifying a bias associated with a sample of the process variable signal, the bias comprising a cushion and an increment; and

outputting an expected value for a prior sample of the process variable signal combined with a portion of the bias as part of the filtered process variable signal, the portion of the bias based at least partially on a size of the cushion.

22.   (New)   The system of Claim 21, wherein the cushion filter is operable to filter the process variable signal by:

identifying the bias associated with a sample of the process variable signal; and

outputting an expected value for a prior sample of the process variable signal combined with a portion of the bias, the portion of the bias based at least partially on a size of the cushion.